

Inventors: Hoch and Dartois  
Serial No.: 09/557,796  
Filed: April 25, 2000  
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In the claims:

Please cancel pending claims 72-94, without prejudice, and replace with new claims 95-125 as follows.

Rule 1.26  
99 95. A recombinant cell, comprising an isolated nucleic acid molecule responsible for converting a source compound to a target compound and one or more isolated genes responsible for converting said target compound to provide a detectable signal.

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100 96. The recombinant cell of claim 99, wherein said detectable signal is selected from the group consisting of growth, fluorescence, luminescence, and color.

101 97. The recombinant cell of claim 99, wherein said detectable signal is growth.

102 98. The recombinant cell of claim 99, wherein said target compound is metabolized to an element selected from the group consisting of carbon, phosphorous, nitrogen, and sulfur.

103 99. The recombinant cell of claim 99, wherein said target compound is selected from the group consisting of ascorbate and 2-Keto-L-Gulonate.

104 100. The recombinant cell of claim 99, wherein said cell is a bacterial cell.

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<sup>105</sup>~~101~~. The recombinant cell of claim <sup>99</sup>~~95~~, wherein said bacterial cell is *Klebsiella oxytoca*.

<sup>106</sup>~~102~~. The recombinant cell of claim <sup>93</sup>~~95~~, wherein said one or more genes are under the control of an inducible promoter.

<sup>107</sup>~~103~~. The recombinant cell of claim <sup>106</sup>~~102~~, wherein said inducible promoter is induced by an inducer distinct from said target compound.

<sup>108</sup>~~104~~. The cell of claim <sup>106</sup>~~102~~, wherein the detectable signal is produced in the presence of the source compound and an inducer of said promoter, but not in the presence of the source compound and absence of said inducer.

<sup>109</sup>~~105~~. The recombinant cell of claim <sup>106</sup>~~102~~, wherein said inducible promoter comprises the *trp-lac* hybrid promoter.

<sup>110</sup>~~106~~. A method for determining the presence, absence, or amount of a target compound in a recombinant cell, comprising:

(a) providing a recombinant cell, wherein said cell expresses an isolated nucleic acid molecule responsible for converting a source compound to a target compound and one or more genes responsible for converting said target compound to provide a detectable signal, and

(b) monitoring said detectable signal, wherein the presence, absence, or amount of said detectable signal indicates the presence, absence, or amount of said target compound.

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<sup>111</sup>~~107~~. The method of claim <sup>110</sup>~~106~~, wherein said detectable signal is selected from the group consisting of growth, fluorescence, luminescence, and color.

<sup>112</sup>~~108~~. The method of claim <sup>110</sup>~~106~~, wherein said detectable signal is growth.

<sup>113</sup>~~109~~. The method of claim <sup>110</sup>~~106~~, wherein said target compound is metabolized to an element selected from the group consisting of carbon, phosphorous, nitrogen, and sulfur.

<sup>114</sup>~~110~~. The method of claim <sup>110</sup>~~106~~, wherein said target compound is selected from the group consisting of ascorbate and 2-Keto-L-Gulonate.

<sup>115</sup>~~111~~. The method of claim <sup>110</sup>~~106~~, wherein said cell is a bacterial cell.

<sup>116</sup>~~112~~. The method of claim <sup>110</sup>~~106~~, wherein said bacterial cell is *Klebsiella oxytoca*.

<sup>117</sup>~~113~~. The method of claim <sup>110</sup>~~106~~, wherein said one or more genes are isolated.

<sup>118</sup>~~114~~. The method of claim <sup>110</sup>~~106~~, wherein said one or more genes are under the control of an inducible promoter.

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<sup>119</sup>~~115~~. The method of claim <sup>118</sup>~~114~~, wherein said inducible promoter is induced by an inducer distinct from said target compound.

<sup>120</sup>~~116~~. The method of claim <sup>118</sup>~~114~~, wherein the detectable signal is produced in the presence of the source compound and an inducer of said promoter, but not in the presence of the source compound and absence of said inducer.

<sup>121</sup>~~117~~. The method of claim <sup>118</sup>~~114~~, wherein said inducible promoter comprises the *trp-lac* hybrid promoter.

<sup>122</sup>~~118~~. A recombinant cell, comprising a nucleic acid molecule comprising a YiaJ responsive promoter transcriptionally linked to a reporter gene, wherein said cell expresses YiaJ.

<sup>123</sup>~~119~~. The recombinant cell of claim <sup>122</sup>~~118~~, wherein said reporter gene produces a detectable signal selected from the group consisting of growth, fluorescence, luminescence, and color.

<sup>124</sup>~~120~~. A method for detecting the presence, absence, or amount of ascorbate in a sample, comprising:

(a) providing a recombinant cell comprising a nucleic acid molecule comprising a YiaJ responsive promoter transcriptionally linked to a reporter gene, wherein said cell expresses YiaJ;

(b) contacting said cell with said sample; and

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(c) monitoring a detectable signal produced from said reporter gene,

wherein the amount of said detectable signal indicates the presence, absence, or amount of ascorbate in said sample.

<sup>125</sup>  
~~121.~~ The method of claim <sup>124</sup>~~120~~, wherein said detectable signal is selected from the group consisting of growth, fluorescence, luminescence, and color.

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<sup>126</sup>  
~~122.~~ The method of claim <sup>124</sup>~~120~~, wherein said cell is a bacterial cell.

<sup>127</sup>  
~~123.~~ The method of claim <sup>124</sup>~~120~~, wherein said YiaJ responsive promoter is from *Klebsiella oxytoca*.

<sup>128</sup>  
~~124.~~ The method of claim <sup>124</sup>~~120~~, wherein said YiaJ responsive promoter is derived from SEQ ID NO:19.

<sup>129</sup>  
~~125.~~ An isolated nucleic acid molecule, comprising a YiaJ responsive promoter transcriptionally linked to a reporter gene.

REMARKS

Claims 72-94 are pending and presently under examination. Applicants have canceled claims 72-94 without prejudice and replaced these claims with new claims 95-125. Following entry of the above amendments, claims 95-125 will be pending.